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Conference Abstract

TaxoTracker: A collaborative platform for taxonomic resource maintenance

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Abstract

Taxonomy is foundational to all biological sciences. Names allow us to organize and communicate information about biological groups. This process is critical for understanding and preserving the biodiversity of our planet. There are an estimated 8.7 million extant eukaryotes (Mora et al. 2011) and possibly as many as 1 trillion microbial species (Locey and Lennon 2016), with untold numbers of extinct taxa yet to be discovered in the fossil record. Accounting for all these taxa and maintaining their nomenclatural resources is one of the great challenges in biology.

A few major hurdles in overcoming this challenge are the inability to find, share, and update taxonomic resources efficiently in real time. Efforts to standardize and continually update taxonomic names in a sustainable way have been limited. The problem is complex, and solutions must deal with the large backlog of names, a constant stream of new names, the confusing merging and splitting of taxonomic synonyms, the subjective nature of taxonomic concepts, and the fundamental limitations on available expertise and curators' time to prepare and maintain such resources. Hyperdiverse groups such as arthropods are especially challenging as there are relatively few experts on any given lineage and changes in taxonomy can be rapid as new species are continually being discovered and described.

After struggling to wrangle taxonomic resources in support of specimen digitization efforts, I began development of TaxoTracker as a proof-of-concept, web-based platform for

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facilitating expert curation and dissemination of biological taxonomies. TaxoTracker is still in development, but its current and planned functionalities will be shown through a combination of demonstration and discussion. TaxoTracker identifies and implements features that attempt to simplify the production and maintenance of expert-curated resources, while also limiting the responsibilities that are placed on individual experts who are often already overburdened and underfunded. These features include:

1. Centralized, searchable, and easily obtained resources in useful formats
2. Community-driven, citation-based curatorial suggestions
3. Expert-reviewed curatorial recommendations
4. Consensus-driven curatorial decisions
5. Effort tracking and credit for suggestions and reviews

Keywords

taxonomy, workbench, curation, community science, biodiversity informatics

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Conflicts of interest

No conflicts of interests are declared.

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